INDEX TO VOLUME 62

January to June 1959—Research Papers 2921 to 2963

A

Page

Abramowitz, M., W. F. Cahill, C. Wade Jr., Heat transfer in laminar flow through a tube, RP2937 ... 101
Absolute light-scattering photometer: I. Design and operation, RP2946 ... 153
Absorption spectra, infrared, of some cyclic acetals of sugars, RP2960 ... 259
Acetals, cyclic, of sugars, infrared absorption spectra, RP2960 ... 259
Adsorption of polyesters on glass, silica, and alumina, RP2933 ... 71
Antenna, monopole with symmetrical top loading, earth currents near, RP2959 ... 247
Antenna, top-loaded monopole, earth currents near with special regard to electrically small L- and T-antennas, RP2961 ... 283
Arsenate, silicate, and phosphate, separation and determination, RP2954 ... 201

B

Barium disilicate—dibarium trisilicate, subsystem, phase equilibria, RP2953 ... 193
Bates, R. G., M. Eden, Resolution of the dissociation constants of *d, l*-malic acid from 0° to 50° C, RP2947 ... 161
Bender, B. K., A. J. Goldman, Capacity requirement of a mail sorting device, RP2948 ... 171
Benzenes, tetrafluoro, 1, 2, 2, 4-, preparation of from 2-chloroheptafluorotoluene, RP2939 ... 113
Blaine, L. R., E. K. Plyler, Infrared high-resolution grating spectrometer, RP2922 ... 7
Block, S., G. Burley, A. Perloff, R. D. Mason, Jr., Refinement of the crystal structure of triclinic magnesium pyroborate, RP2936 ... 95
Block-type osmometer, design and performance, RP2931 ... 63
Boric oxide, the heat of formation, heat of reaction of diborane with water, RP2927 ... 43
Boron trichloride, heat of formation, RP2956 ... 213
Burley, G., S. Block, A. Perloff, R. D. Mason, Jr., Refinement of the crystal structure of triclinic magnesium pyroborate, RP2936 ... 95

C

Cahill, W. F., M. Abramowitz, C. Wade, Jr., Heat transfer in laminar flow through a tube, RP2937 ... 101
Capacity requirement of a mail sorting device, RP2948 ... 171
Chi, M., L. K. Irwin, Elastic deformation in strips with holes loaded through pins, RP2945 ... 147
Clabaugh, W. S., A. Jackson, Separation and determination of phosphate, silicate, and arsenate, RP2954 ... 201
Crystal structure of triclinic magnesium pyroborate, refinement, RP2936 ... 95
Currents, earth, near a top-loaded monopole antenna, with special regard to electrically small L- and T-antennas, RP2961 ... 283
Cyclic acetals of sugars, infrared absorption spectra, RP2960 ... 257

D

Deformation, elastic, in strips with holes loaded through pins, RP2945 ... 147
Degradation, thermal, of polymers at low rates, RP2957 ... 219
Design and performance of a block-type osmometer, RP2931 ... 63
Determination of niobium and tantalum in titanium-base alloys, RP2929 ... 53
Determination of titanium, zirconium, niobium, and tantalum in steels: separations by anion-exchange, RP2923 ... 11
Deuterostyrenes, mass spectra of some, RP2926 ... 39
Deviation, standard, and mean absolute value of the phase of a constant vector plus a Rayleigh-distributed vector, RP2950 ... 183
Diborane, heat of reaction of, with water and the heat of formation of boric oxide, RP2927 ... 43
Dissociation constant of *d, l*-malic acid, RP2947 ... 161
Doderer, G. C., D. McIntyre, Absolute light-scattering photometer: I. Design and operation, RP2946 ... 153
—, —, *J. H. O'Mara*, Design and performance of a block-type osmometer, RP2931 ... 63

E

Earth currents near a monopole antenna with symmetrical top loading, RP2959 ... 247
Earth currents near a top-loaded monopole antenna with special regard to electrically small L- and T-antennas, RP2961 ... 283
Earth satellite, theory of the effect of drag on the orbital inclination of, RP2934 ... 79
Eden, M., R. G. Bates, Resolution of the dissociation constants of *d, l*-malic acid from 0° to 50° C, RP2947 ... 161
Effect of internal radiant heat transfer on temperature distribution, thermal stress, and deflection in box beams, RP2949 ... 175
Effect of oxygen on the bonding of gold to fused silica, RP2942 ... 127
Elastic deformation in strips with holes loaded through pins, RP2945 ... 147
Engel, O. G., Pits in metals caused by collision with liquid drops and soft metal spheres, RP2958 ... 229
Exponential integral $\int_1^\infty e^{-xt}t^{-n}dt$ for large values of n, RP2941 ... 123

F

Flatness of large surfaces, testing of by interferometer, RP2943 ... 137
Florin, R. E., W. J. Pummer, L. A. Wall, Fluorination of haloaromatic compounds, RP2938 ... 107
—, —, —, Reactions of aromatic fluorocarbons with hydrogen, RP2940 ... 119
—, —, —, Synthesis of some disubstituted 3,4,5,6- tetrafluorobenzenes, RP2939 ... 113
Fluorination of haloaromatic compounds, RP2938 ... 107
Fluorocarbons, aromatic, reactions with hydrogen, RP2940 ... 119
Formation of titanium tetrachloride, heat, RP2928 ... 49
Frolen, L. J., G. S. Ross, Simple rotating molecular still, RP2951 ... 187

G

Garfinkel, S. B., W. B. Mann, L. L. Stockmann, W. J. Youden, A. Schwebel, P. A. Mullen, Preparation of new solution standards of radium, RP2924 ... 21
Gautschi, W., Exponential integral $\int_1^\infty e^{-xt}t^{-n}dt$ for large values of n, RP2941 ... 123
Glass formation in polymers. II. The system rubber-sulfur, RP2944 ... 141
Glasses, zinc borosilicate, properties, RP2930 ... 59
Gold, the bonding of to fused silica, effect of oxygen, RP2942 ... 127
Goldman, A. J., B. M. Bender, Capacity requirement of a mail sorting device, RP2948 ... 171
Goodman, S., S. B. Russell, C. E. Noble, Effect of internal radiant heat transfer on temperature distribution, thermal stress, and deflection in box beams, RP2949 ... 175
Gross, F. L., J. B. Saunders, Interferometer for large surfaces, RP2943 ... 137

H

Hague, J. L., L. A. Machlan, Determination of niobium and tantalum in titanium-base alloys, RP2929 ... 53
—, —, Determination of titanium, zirconium, niobium, and tantalum in steels: separations by anion-exchange, RP2923 ... 11
Haloaromatic compounds, fluorination, RP2938 ... 107
Hamilton, E. H., R. M. Waxler, J. M. Nivert, Jr., Properties of zinc borosilicate glasses, RP2930 ... 59
Heat of formation of boron trichloride, RP2956 ... 213
Heat of formation of potassium calcium silicate, RP2955 ... 207
Heat of formation of titanium tetrabromide, RP2932 ... 67
Heat of formation of titanium tetrachloride, RP2928 ... 49
Heat of mixing of polybutadiene and benzene, RP2921 ... 1
Heat of reaction of diborane with water and the heat of formation of boric oxide, RP2927 ... 43
Heat transfer in laminar flow through a tube, RP2937 ... 101
Heat transfer, effect of internal radiant, on temperature distribution, thermal stress, and deflection in box beams, RP2949 ... 175
High-resolution grating spectrometer, infrared, RP2922 ... 7

I

Infrared absorption spectra of some cyclic acetals of sugars, RP2960 ... 257
Infrared high-resolution grating spectrometer, RP2922 ... 7
Intercomparing neutron source strengths by means of a manganous sulfate bath, scintillation counter method, RP2952 ... 189
Interferometer for large surfaces, RP2943 ... 137
Irwin, L. K., M. Chi, Elastic deformation in strips with holes loaded through pins, RP2945 ... 147
Isbell, H. S., R. S. Tipson, J. E. Stewart, Infrared absorption spectra of some cyclic acetals of sugars, RP2960 ... 257

J

Jackson, A., W. S. Clabaugh, Separation and determination of phosphate, silicate, and arsenate, RP2954 ... 201
Jessup, R. S., Heat of mixing of polybutadiene and benzene, RP2921 ... 1
Johler, J. R., L. C. Walters, Mean absolute value and standard deviation of the phase of a constant vector plus a Rayleigh-distributed vector, RP2950 ... 183
Johnson, W. H., E. J. Prosen, F. Y. Pergiel, Heat of reaction of diborane with water and the heat of formation of boric oxide, RP2927 ... 43
—, *R. A. Nelson, E. J. Prosen*, Heat of formation of titanium tetrachloride, RP2928 ... 49
—, —, —, Heat of formation of titanium tetrabromide, RP2932 ... 67
—, *R. G. Miller, E. J. Prosen*, Heat of formation of boron trichloride, RP2956 ... 213

K

Knudsen, H. L., Earth currents near a top-loaded monopole antenna with special regard to electrically small L- and T-antennas, RP2961 ... 283

L

Laminar flow through a tube, heat transfer, RP2937 ... 101
Large surfaces, testing of by interferometer, RP2943 ... 137
Lead oxide-niobium pentoxide, phase equilibrium relations in the binary system, RP2925 ... 27
Levin, E. M., R. S. Roth, Phase equilibria in the subsystem barium disilicate—dibarium trisilicate, RP2953 ... 193

M

Machlan, L. A., J. L. Hague, Determination of niobium and tantalum in titanium-base alloys, RP2929 ... 53
—, —, Determination of titanium, zirconium, niobium, and tantalum in steels: separations by anion-exchange, RP2923 ... 11
Madorsky, S. L., Thermal degradation of polymers at low rates, RP2957 ... 219
Mail sorting device, capacity requirement, RP2948 ... 171
Malic acid, dissociation constant, RP2947 ... 161
Mandelkern, L., G. M. Martin, Glass formation in polymers. II. The system rubber-sulfur, RP2944 ... 141

Page

Mann, W. B., L. L. Stockmann, W. J. Youden, A. Schwebel, P. A. Mullen, S. B. Garfinkel, Preparation of new solution standards of radium, RP2924 21
Martin, G. M., L. Mandelkern, Glass formation in polymers. II. The system rubber-sulfur, RP2944 141
Mason, R. D., Jr., S. Block, G. Burley, A. Perloff, Refinement of the crystal structure of triclinic magnesium pyroborate, RP2936 95
Mass spectra of some deuterostyrenes, RP2926 39
McIntyre, D., G. C. Doderer, Absolute light-scattering photometer: I. Design and operation, RP2946 153
—, —, *J. H. O'Mara,* Design and performance of a block-type osmometer, RP2931 63
Mean absolute value and standard deviation of the phase of a constant vector plus a Rayleigh-distributed vector, RP2950 183
Metals, pits in, by collision with liquid drops and soft metal spheres, RP2958 229
Miller, R. G., W. H. Johnson, E. J. Prosen, Heat of formation of boron trichloride, RP2956 213
Mohler, F. L., E. I. Quinn, Mass spectra of some deuterostyrenes, RP2926 39
Molecular still, simple rotating, RP2951 187
Monopole antenna with symmetrical top loading, earth currents near, RP2959 247
Moore, D. G., H. R. Thornton, Effect of oxygen on the bonding of gold to fused silica, RP2942 127
Mosburg, E. R., Jr., Scintillation counter method of intercomparing neutron source strengths by means of a manganous sulfate bath, RP2952 189
Mullen, P. A., W. B. Mann, L. L. Stockmann, W. J. Youden, A. Schwebel, S. B. Garfinkel, Preparation of new solution standards of radium, RP2924 21

N

Nelson, R. A., W. H. Johnson, E. J. Prosen, Heat of formation of titanium tetrabromide, RP2932 67
—, —, —, Heat of formation of titanium tetrachloride, RP2928 49
Neutron source strengths, scintillation counter method of intercomparing by means of a manganous sulfate bath, RP2952 189
Newman, E. S., Heat of formation of potassium calcium silicate, RP2955 207
Niobium and tantalum in titanium-base alloys, determination of, RP2929 53
Niobium pentoxide-lead oxide, phase equilibrium relations in the binary system, RP2925 27
Niobium, titanium, zirconium, and tantalum in steels, determination of, RP2923 11
Nivert, J. M., Jr., E. H. Hamilton, R. M. Waxler, Properties of zinc borosilicate glasses, RP2930 59
Noble, C. E., S. Goodman, S. B. Russell, Effect of internal radiant heat transfer on temperature distribution, thermal stress, and deflection in box beams, RP2949 175
Numerical analysis, theorem of M. Riesz, RP2935 89
Numerical computation, exponential integral, RP2941 123

O

O'Mara, J. H., D. McIntyre, G. C. Doderer, Design and performance of a block-type osmometer, RP2931 63
On a theorem of M. Riesz, RP2935 89
Osmometer, block-type, design and performance, RP2931 63
Oxygen, effect on the bonding of gold to fused silica, RP2942 127

P

Parker, M. S., R. R. Stromberg, A. R. Quasius, S. D. Toner, Adsorption of polyesters on glass, silica, and alumina, RP2933 71
Pearl, M., On a theorem of M. Riesz, RP2935 89
Pergiel, F. Y., W. H. Johnson, E. J. Prosen, Heat of reaction of diborane with water and the heat of formation of boric oxide, RP2927 43
Perloff, A., S. Block, G. Burley, R. D. Mason, Jr., Refinement of the crystal structure of triclinic magnesium pyroborate, RP2936 95
Phase equilibria in the subsystem barium disilicate—dibarium trisilicate, RP2953 193
Phase equilibrium relations in the binary system lead oxide-niobium pentoxide, RP2925 27
Phase of a constant vector plus a Rayleigh-distributed vector, mean absolute value and standard deviation, RP2950 183
Phosphate, silicate, and arsenate, separation and deteranination, RP2954 201
Photometer, absolute light-scattering: I. Design and operation, RP2946 153
Photometer for determining absolute light scattering from polymer solutions: I. Design and operation, RP2946 153
Pits in metals caused by collision with liquid drops and soft metal spheres, RP2958 229
Plyler, E. K., L. R. Blaine, Infrared high-resolution grating spectrometer, RP2922 7
Polybutadiene and benzene, heat of mixing, RP2921 1
Polyesters, absorption on glass, silica, and alumina, RP2933 71
Polymers, glass formation. II. Rubber-sulfur system, RP2944 141
Polymers, thermal degradation at low rates, RP2957 219
Potassium calcium silicate, heat of formation, RP2955 207
Preparation of new solution standards of radium, RP2924 21
Properties of zinc borosilicate glasses, RP2930 59
Prosen, E. J., W. H. Johnson, F. Y. Pergiel, Heat of reaction of diborane with water and the heat of formation of boric oxide, RP2927 43
—, —, *R. A. Nelson,* Heat of formation of titanium tetrabromide, RP2932 67
—, —, —, Heat of formation of titanium tetrachloride, RP2928 49
—, —, *R. G. Miller,* Heat of formation of boron trichloride, RP2956 213
Pummer, W. J., R. E. Florin, L. A. Wall, Fluorination of haloaromatic compounds, RP2938 107
—, —, —, Reactions of aromatic fluorocarbons with hydrogen, RP2940 119
—, —, —, —, Synthesis of some disubstituted 3,4,5,6-tetrafluorobenzenes, RP2939 113

Q

Quasius, A. R., R. R. Stromberg, S. D. Toner, M. S. Parker, Adsorption of polyesters on glass, silica, and alumina, RP2933 71
Quinn, E. L., F. L. Mohler, Mass spectra of some deuterostyrenes, RP2926 39

R

Page

Radium, preparation of new solution standards, RP2924 21
Reactions of aromatic fluorocarbons with hydrogen, RP2940 119
Refinement of the crystal structure of triclinic magnesium pyroborate, RP2936 95
Resolution of the dissociation constants of *d,l*-malic acid from 0° to 50° C, RP2947 161
Riesz, M., theorem of, RP2935 89
Ross, G. S., L. J. Frolen, Simple rotating molecular still, RP2951 187
Rotating molecular still, simple, RP2951 187
Roth, R. S., E. M. Levin, Phase equilibria in the subsystem barium disilicate—dibarium trisilicate, RP2953 193
—, Phase equilibrium relations in the binary system lead oxide-niobium pentoxide, RP2925 27
Russell, S. B., S. Goodman, C. E. Noble, Effect of internal radiant heat transfer on temperature distribution, thermal stress, and deflection in box beams, RP2949 175

S

Saunders, J. B., F. L. Gross, Interferometer for large surfaces, RP2943 137
Schwebel, A., W. B. Mann, L. L. Stockmann, W. J. Youden, P. A. Mullen, S. B. Garfinkel, Preparation of new solution standards of radium, RP2924 21
Scintillation counter method of intercomparing neutron source strengths by means of a manganous sulfate bath, RP2952 189
Separation and determination of phosphate, silicate, and arsenate, RP2954 201
Silicate, phosphate, and arsenate, separation and determination, RP2954 201
Simple rotating molecular still, RP2951 187
Spectra, infrared absorption, of some cyclic acetals of sugars, RP2960 257
Spectrometer, infrared high-resolution grating, RP2922 7
Steels, determination of titanium, zirconium, niobium, and tantalum, RP2923 11
Stewart, J. E., R. S. Tipson, H. S. Isbell, Infrared absorption spectra of some cyclic acetals of sugars, RP2960 257
Stockmann, L. L., W. B. Mann, W. J. Youden, A. Schwebel, P. A. Mullen, S. B. Garfinkel, Preparation of new solution standards of radium, RP2924 21
Strips with holes loaded through pins, elastic deformation, RP2945 147
Stromberg, R. R., A. R. Quasius, S. D. Toner, M. S. Parker, Adsorption of polyesters on glass, silica, and alumina, RP2933 71
Sugars, infrared absorption spectra of some cyclic acetals, RP2960 257
Synthesis of some disubstituted 3,4,5,6-tetrafluorobenzenes, RP2939 113

T

Tantalum in titanium-base alloys, determination of niobium, RP2929 53
Tantalum, niobium, titanium, and zirconium in steels, determination, RP2923 11
Tetrafluorobenzenes, disubstituted 3,4,5,6-, synthesis, RP2939 113
Theorem of M. Riesz, RP2935 89
Theory of the effect of drag on the orbital inclination of an earth satellite, RP2934 79
Thermal degradation of polymers at low rates, RP2957 219
Thermal stress in box beams, effect of internal radiant heat transfer, RP2949 175
Thornton, H. R., D. G. Moore, Effect of oxygen on the bonding of gold to fused silica, RP2942 127
Tipson, R. S., H. S. Isbell, J. E. Stewart, Infrared absorption spectra of some cyclic acetals of sugars, RP2960 257
Titanium-base alloys, determination of niobium and tantalum, RP2929 53
Titanium tetrabromide, heat of formation, RP2932 67
Titanium tetrachloride, heat of formation, RP2928 49
Titanium, zirconium, niobium, and tantalum in steels, determination, RP2923 11
Toner, S. D., R. R. Stromberg, A. R. Quasius, M. S. Parker, Adsorption of polyesters on glass, silica, and alumina, RP2933 71
Top-loaded monopole antenna, earth currents near, RP2959 247

V

Vectors, a constant plus a Rayleigh-distributed, mean absolute value and standard deviation of the phase, RP2950 183
Vinti, J. P., Theory of the effect of drag on the orbital inclination of an earth satellite, RP2934 79

W

Wade, C., Jr., M. Abramowitz, W. F. Cahill, Heat transfer in laminar flow through a tube, RP2937 101
Wait, J. R., Earth currents near a monopole antenna with symmetrical top loading, RP2959 247
Wall, L. A., R. E. Florin, W. J. Pummer, Fluorination of haloaromatic compounds, RP2938 107
—, —, —, Reactions of aromatic fluorocarbons with hydrogen, RP2940 119
—, —, —, —, Synthesis of some disubstituted 3,4,5,6-, tetrafluorobenzenes, RP2939 113
Walters, L. C., J. R. Johler, Mean absolute value and standard deviation of the phase of a constant vector plus a Rayleigh-distributed vector, RP2950 183
Waxler, R. M., E. H. Hamilton, J. M. Nivert, Jr., Properties of zinc borosilicate glasses, RP2930 59

Y

Youden, W. J., W. B. Mann, L. L. Stockmann, A. Schwebel, P. A. Mullen, S. B. Garfinkel, Preparation of new solution standards of radium, RP2924 21

Z

Zinc boroxilicate glasses, properties, RP2930 59
Zirconium, niobium, titanium, and tantalum in steels, determination, RP2923 11